Northern

D212H960 / D212HIR960

INDOOR 960H/700 TV LINE CAMERAS

USER GUIDE:

D212H960 – Day/Night Model
D212HIR960 – IR Model

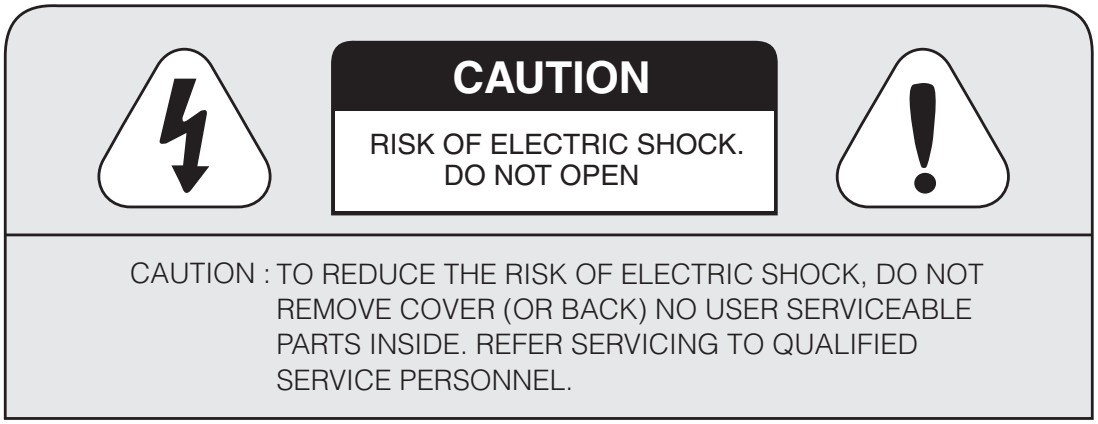
Northern 3625 Cincinnati Avenue, Rocklin, CA 95765 ◆855-388-7422 ext 136 ◆ www.northernvideo.com

Rev. 032714

Table of Contents

- Precautions
- Features
- What's Included & Parts Identification
- Dimensions
- Installation
- Assembly
- Connection
- OSD Menu setup
- Trouble shooting

Safety information


CAUTION
RISK OF ELECTRIC SHOCK.
DO NOT OPEN
CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol indicates that dangerous voltage consisting a risk of electric shock is present within this unit.

This exclamation point symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Regulatory Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions :

(1)This device may not cause harmful interference, and

(2)This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at his own expense.

If the product is to be put out of operation definitively, take it to a local recycling plant for a disposal which is not harmful to the environment.

▶ Precautions

- Do not install the camera outdoors.
- Choose an ideal location for the camera, location must be protected against moisture and vibration.
- Be careful not to scratch the camera unit, especially lens or dome cover.
- Use the camera within the temperature(14°F ~ 122°F).
- Handle with care. Dropping it can cause serious damage.
- Do not point into direct sunlight.
- Use an appropriate power supply, 12VDC or 24VAC.

Features

- 1/3" SONY Super HAD CCDII(WDR 960H)
- 700 TV Line Resolution
- Wide Dynamic Range Function
- 3D Digital Noise Reduction (3D-DNR)
- Day & Night function
- Full OSD with Multi-language
- Multi function : Sense up(1024X), Motion Detection, Privacy Mask, Freeze, Flip(H/V/R), E-Zoom
- 25M range visible in total darkness with 24pcs of IR LEDs. (Model D212HIR960 Only)
- 3-Axis Bracket for 3D(Pan/Tilt/Roll) rotation
- Extra video connector for easy installation

▶ What's Included & Parts Idenified

What's Included

(1) CAMERA

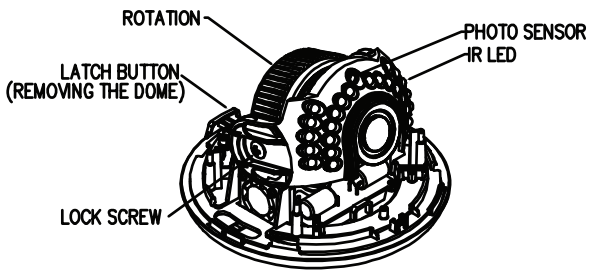
(1) WHITE HOUSING

(1) VIDEO TEST CONNECTOR

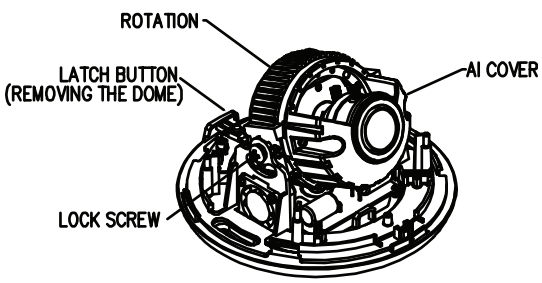
(1) MOUNTING HARDWARE PACKAGE

(1) USER GUIDE

Parts Identified

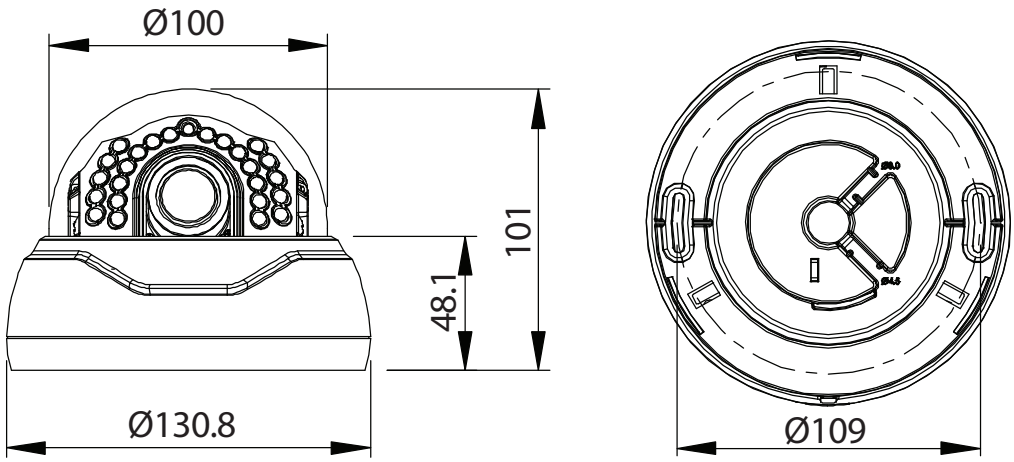


IR TYPE (AI LENS)



NORMAL TYPE (AI LENS)

Dimensions



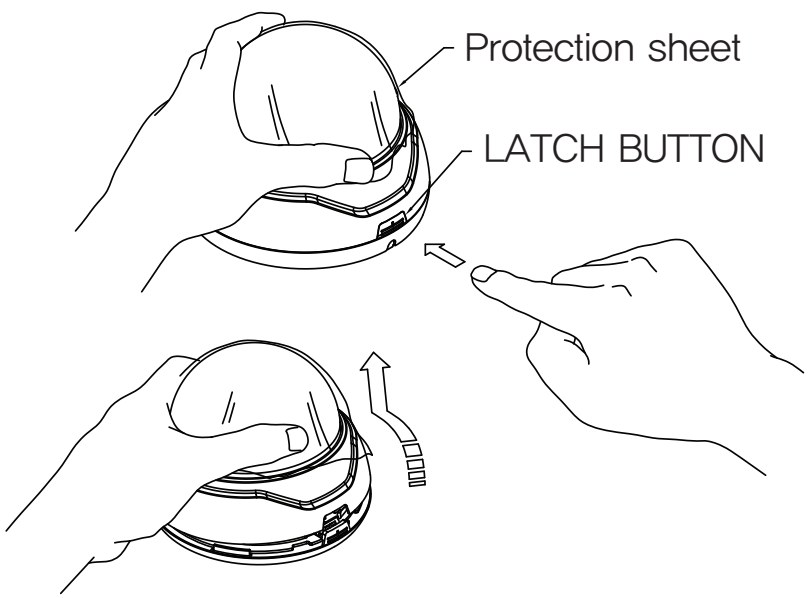
Structure specification

MECHANICAL	
Dimension	Ø130.8 X 101(H)mm
Weight	Approx. 500g
ENVIRONMENT	
Construction	Plastic
Ingress Protection	Indoor Only
Operating Temp	14°F~ 122°F
Humidity	0% to 90%
ELECTRICAL (Power Consumption)	
Power Supply	Regulated 12V DC ±10% 12V DC / 24V AC Dual voltage
Current Consumption	Max. 500mA (at 12V DC): LED ON Max. 130mA (at 12V DC) LED OFF
Heater	Yes
CERTIFICATION	
CE, FCC, ROHS	Yes

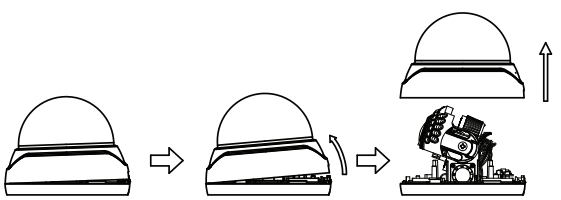
▶ Installation

HOW TO INSTALL

1. Opening the dome : Push in the latch button.
(Remove the protection sheet after installing.)



2. Removing the dome : Lift the dome.
When you push the latch button, it is unlocked and you can lift the dome. To switch to white housing, gently push the bubble through the black housing. Make note of latch button & inner sleeve position. Switch to white housing by gently pushing bubble back in place with latch button & sleeve in same position.



3. Camera installation

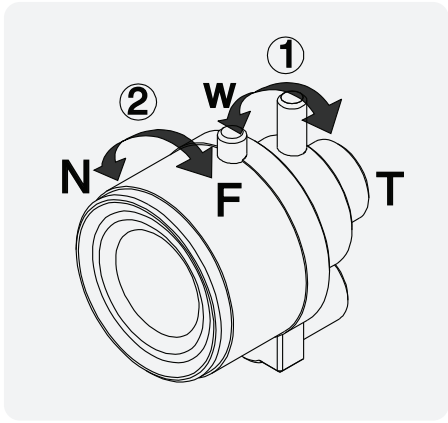
(1) Fix the camera set with the supplied screws on ceiling or wall mount.
If you don't use supplied screws, the camera may fall off.

(2) Please refer to '4. Camera angle adjustment' regarding adjust camera angle.

(3) Lens adjustment

① By turning the "Tele-Wide" knob, you can access a range of focal lengths within specified limits.

② Then, by turning the "Near-Far" knob, you can set the focus toward the desired object.



* For LED model, the IR LED bank is hinged, and can be moved back to allow access to lens adjustment. After lens adjustment is made, be sure to move IR LED bank back to original position.

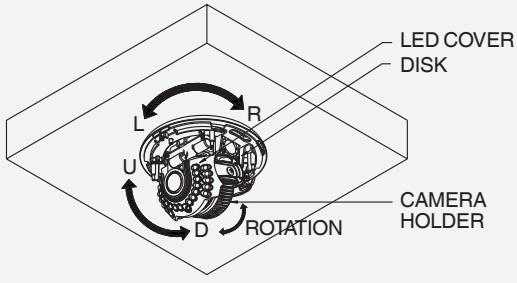
4. Camera angle adjustment :

(1) Pan adjustment :
Grasp the disk of camera and then adjust direction to the right or left (-180 ° ~ 180 °

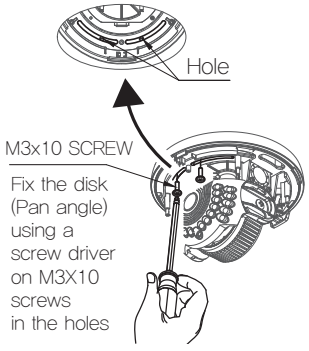
(2) Tilt adjustment : Grasp the LED cover of camera and then adjust direction up or down (6 ° ~ 90 °)

(3) Roll adjustment : Grasp the camera holder and then rotate (-178 ° ~178 °)

(4) Re-assemble the camera.

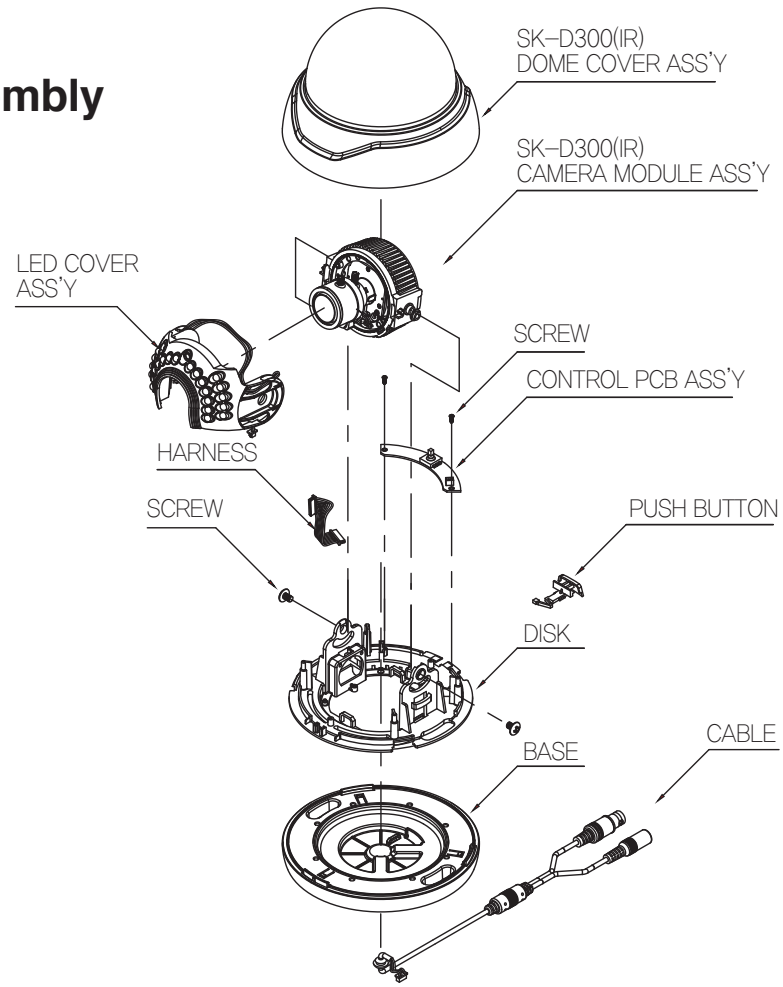


<Caution>
Do not force past adjustment range or damage may occur.



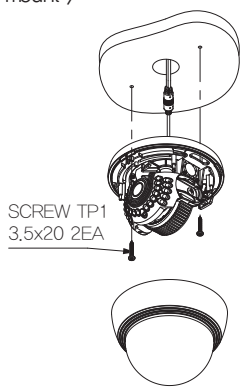
▶ Assembly

Assembly

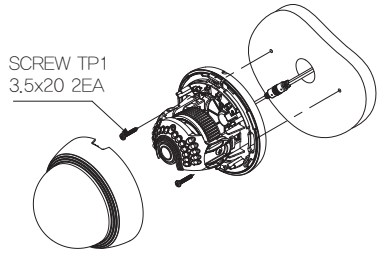


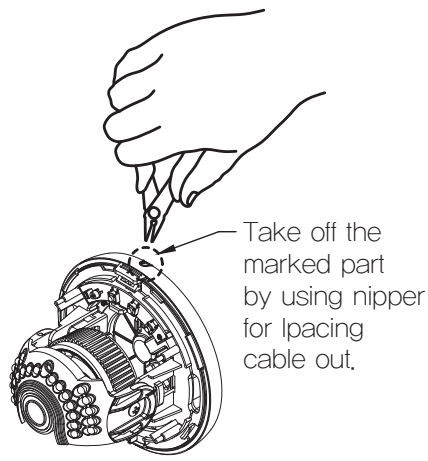
Mounting

〈 Ceiling mount 〉

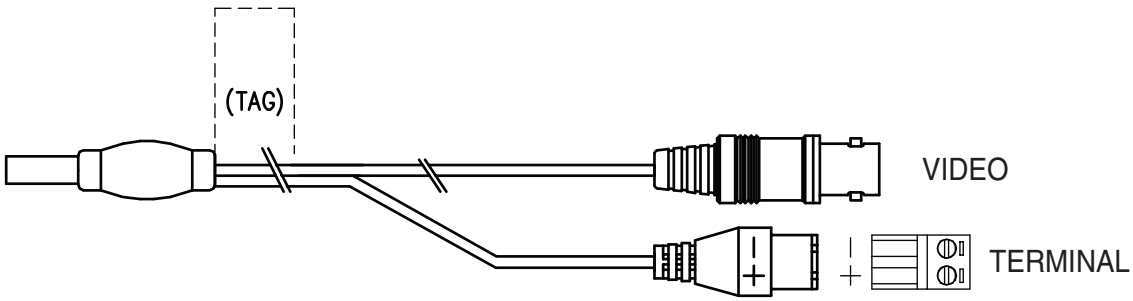


〈 Wall mount 〉





AC 24V / DC 12V

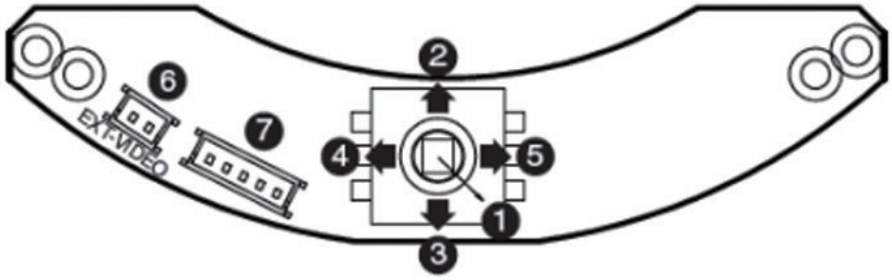


▶ OSD Menu Set up

Main Set up

SCENE SELECT	CUSTOM, INDOOR, OUTDOOR, BACKLIGHT, ITS, FULL AUTO
	SHUTTER, AGC / WHITE BALANCE / HLC, BLC / WDR / DNR / DAY&NIGHT / IR OPTIMIZER / LENS SHD COMP / DEFOG / FLK LESS / ANTI CR
PICT ADJUST	BRIGHTNESS / CONTRAST / SHARPNESS / HUE / COLOR GAIN
EZOOM	ON / OFF
DIS	ON / OFF
PRIVACY MASK	ON (15 AREAS) / OFF
MOTION DET	ON (4 AREAS) / OFF
SYS SETTING	SYNC / LENS / FLIP / MONITOR / COMMUNICATION / CAMERA ID
LANGUAGE	English / Espanol / Pyccknn / Portugues / Deutsch / Francais / Japanese
VERSION	Display FW version
MAINTENANCE	W.PIX MASK / CAMERA RESET
EXIT	SAVE / NOT SAVE / CANCEL / BACK

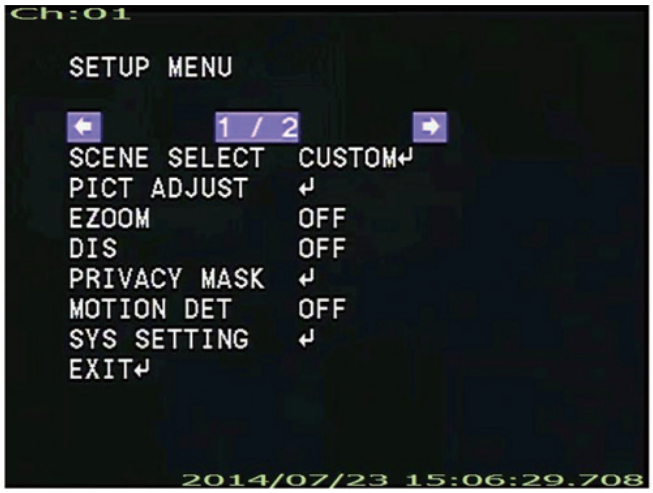
Function Setting

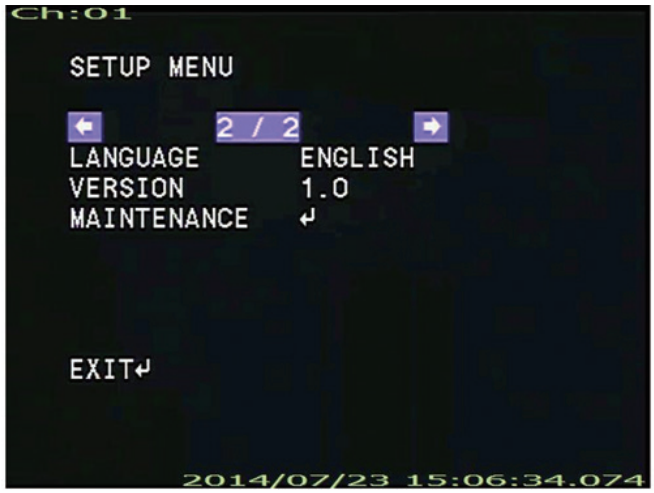


①SET : Used to access the menu and confirm selection.
②UP, ③DOWN : Used to move the cursor to up or down.
④LEFT, ⑤RIGHT : Used to move the cursor to left or right and change the value.
⑥EXT-VIDEO : Extra video output terminal for installation.
⑦DEBUG PORT : It is used for upgrading the product function and after-sales services.

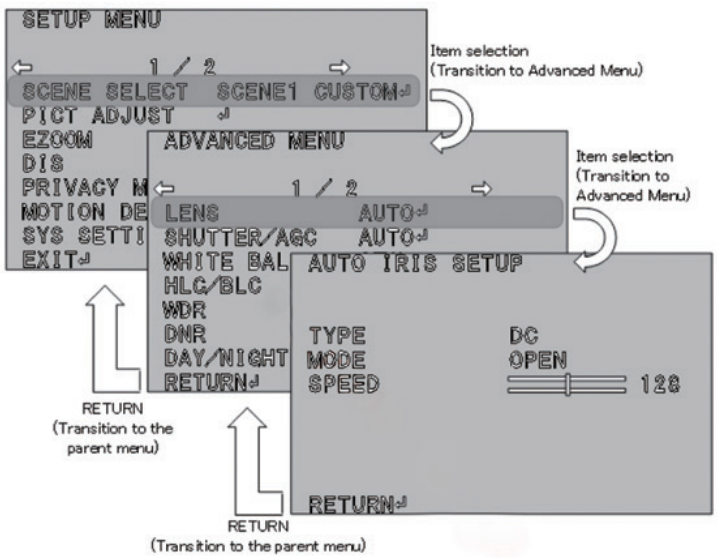
OSD Menu Control and Set up

The on–screen menu is operated with the control lever on the PCB. To call the on–screen menu, press the control lever straight downward. The main menu is inserted





Select the menu item by tilting the control lever in direction ↑ or ↓.
Change an adjustment by tilting the control lever in direction ← or →.
Change a Page transition by tilting the control lever in direction ← or →. (1/2 ↔ 2/2)
If "↵" is indicated beside menu item or an adjusting option, It is possible to call a submenu for further adjustments by pressing down on the control lever.
To return from a submenu to the prior menu level, select the menu item RETURN and confirm by pressing down the control lever. Via the submenu item RETURN, the menu is completely exited. Exit the main menu via the menu item EXIT.



▶ OSD Menu Set up

SCENE SELECT / ADVANCED MENU

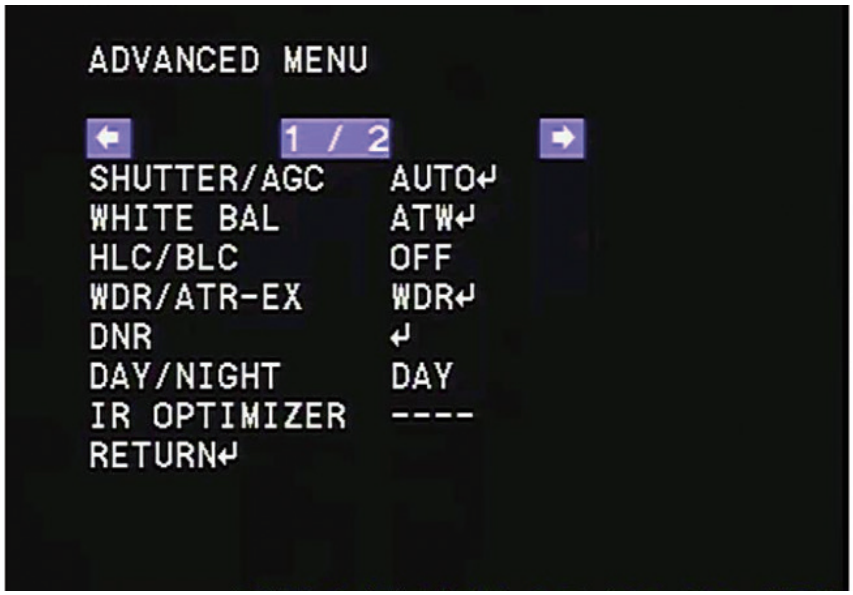
The scene select function can select from 6 modes using the SECNE SELECT. Press 'Enter' on SCENE SELECT to bring out sub–menu, ADVANCED MENU. SCENE SELECT menu is same as shown below, rather than CUSTOM menu, in the other SCENE, there are advanced–menus non–able to adjust. (Refer the table below.)

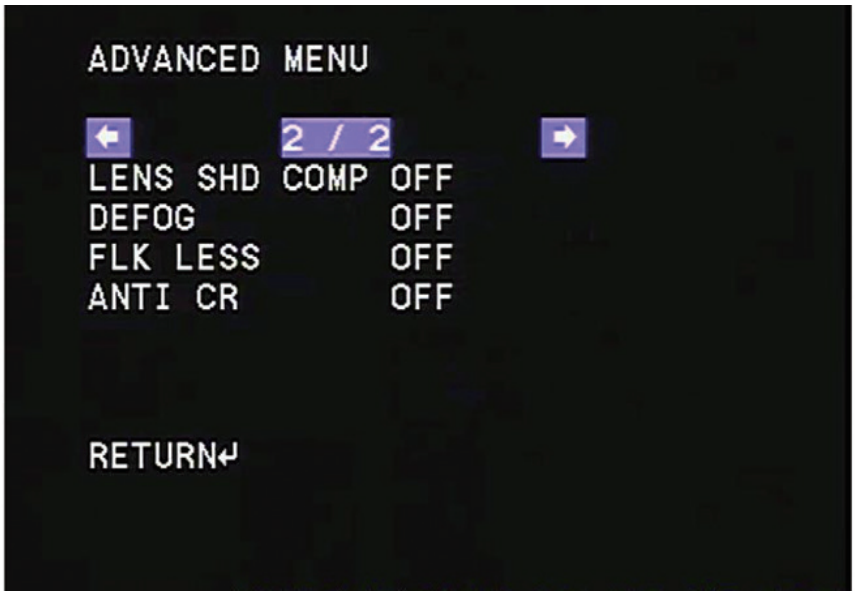
Situation		Resolution	Contrast	S/N	Dunamic range
Custon	Average parameter default values are set (values alterable)	MID	MID	MID	MID
Indoor	Default values that emphasize contrast are set.	MID	HIGH	MID	LOW
Ourdoor	Default values that emphasize contrast and resolution are set.	HIGH	HIGH	MID	LOW
Backlight	Default values that emphasize a high dynamic range are set.	LOW	LOW	MID	HIGH
ITS (Traffic surveillance)	Default values that emphasize resolution to reduce the blur of moving subjects are set	HIGH	MID	LOW	MID
Full-Auto	Average parameter default values are set (values inalterable)	MID	MID	MID	MID

Advanced menu(● :adjustable, × :inalterable)					
SCENE	**CUSTOM**	**INDOOR**	**OUTDOOR**	**BACKLIGHT**	**ITS**
SHUTTER/AGC	●	●	●	●	●
WHITE BAL	●	×	×	×	×
HLC/BLC	●	●	●	●	●
WDR/ATR-EX	●	×	×	×	×
DNR(=3DNR)	●	●	●	●	●
DAY/NIGHT	●	●	●	●	●
IR OPTIMIZER	●	×	×	×	×
LENS SHD COMP	●	●	●	●	●
DEFOG	●	×	×	×	×
FLK LESS	●	●	●	●	●
ANTI CR	●	●	●	●	●

ADVANCED MENU

Adjust the setting on selected scene.

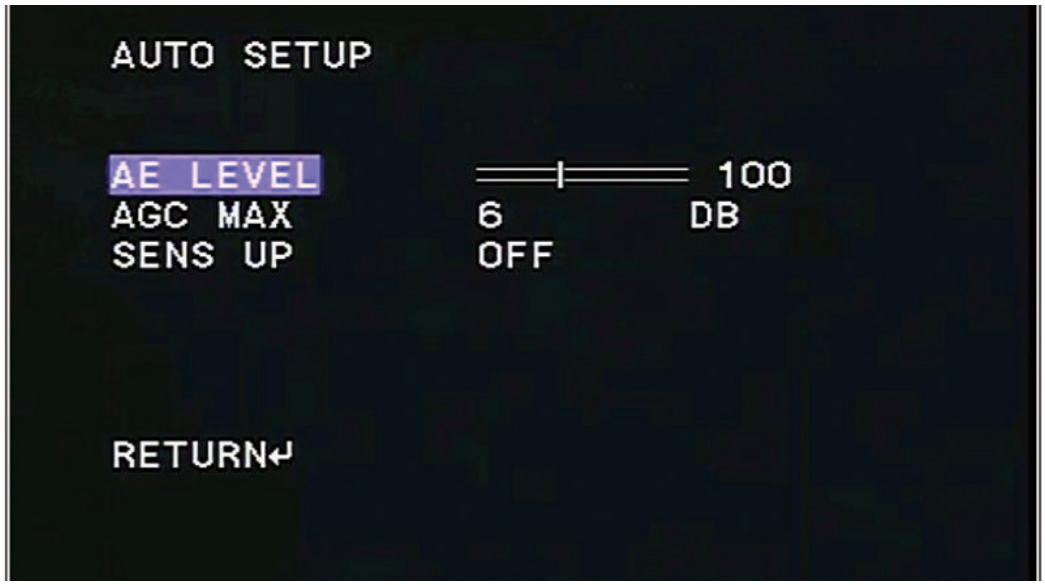




▶ OSD Menu Set up

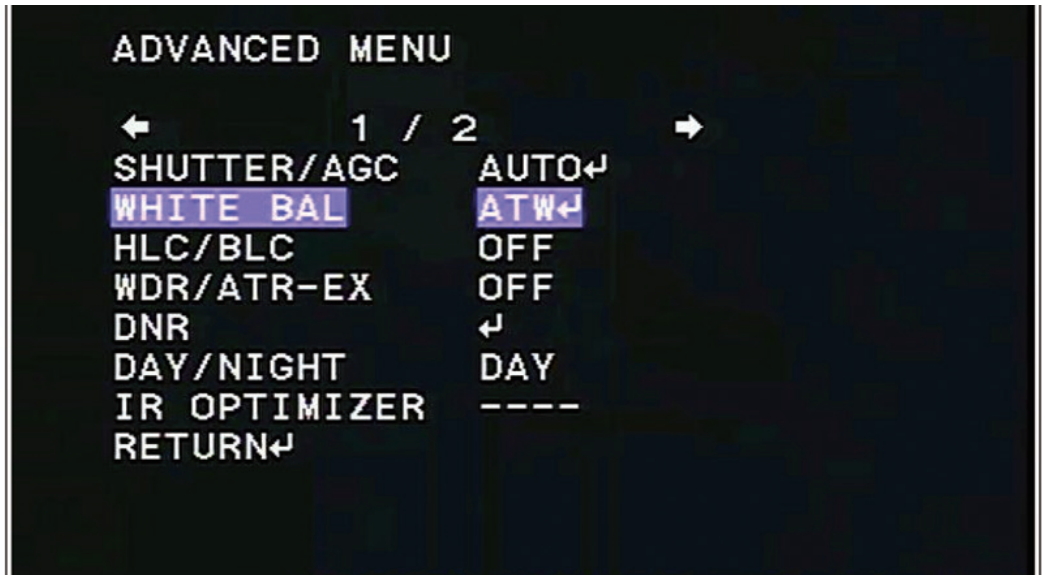
SHUTTER/AGC MENU

AUTO : Automatic adaptation with change of amount of light
MANUAL : Adjust shutter manually.
FIX : Adjust shutter Fixed.



AE LEVEL(AUTO shutter only) : Adjust AE(Auto Exposure) brightness level (0∼255)
AGC MAX : If the illumination is poor, the video signal is amplified accordingly by the automatic gain control (AGC). The value AGC in the submenu EX-POSURE defines the control range. A high amplification increases the picture brightness; however, a higher picture noise is created as well.
6 / 12 / 18 / 24 / 30 / 36 / 42 / 44.8 DB : Adjust AGC MAX level
SENSE UP (AUTO, OFF) : If only a very poor illumination is available, the light sensitivity of the camera can be increased. The shutter time is extended so that the exposure time covers several pictures. In the line SENSE UP it is possible to select if the sensitivity should be increased (ON) or not (OFF). If On has been selected, adjust the factor for the exposure time (X2, ···. X1024)
SHUTTER(MANUAL, FIX only) : Adjust shutter manually. X256, X128, X64, X32. X16, X8, X4 , X2, FLD, 1/60(1/50), 1/120(1/100), 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000

WHITE BALANCE



ATW : Select this when the color temperature is between 1,800K°~10,500K°

- SPEED : ATW pull-in speed setting
- DELAY CNT : Wait interval until pull-in starts
- ATW FRAME : ATW frame expansion setting
- ENVIRONMENT : Installation environment settings

PUSH : To find the optimal luminance level for the current environment, point the camera towards a sheet of white paper and press the set button. If the environment changed, readjust it.

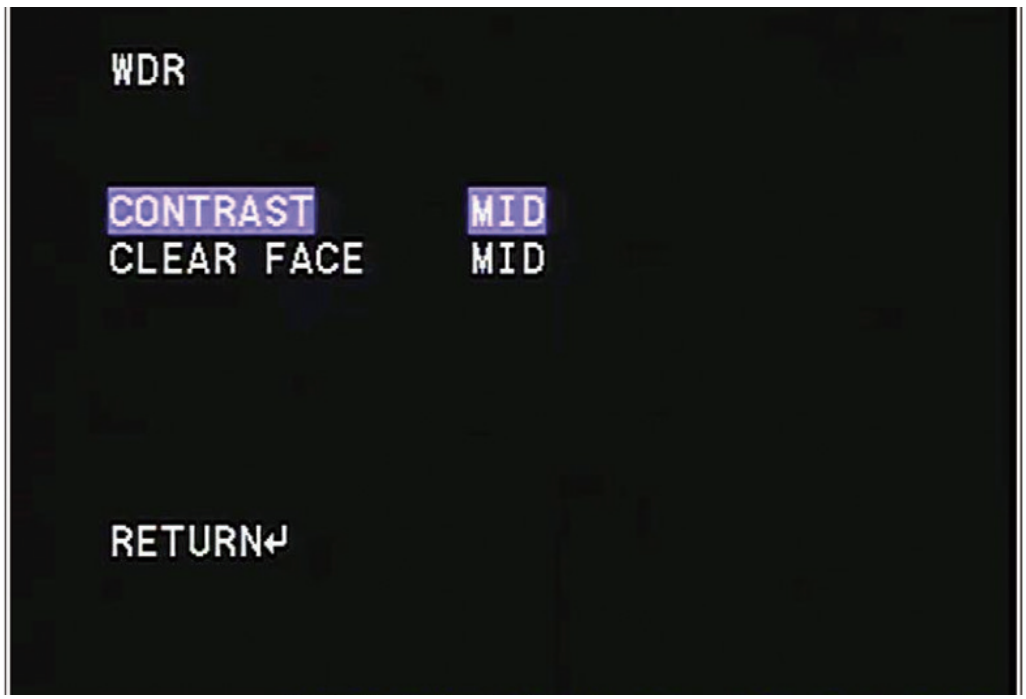
USER1 : The gain values for the outdoor fixed mode (Adjust the Red or Blue values)

USER2 : The gain values for the fluorescent light fixed mode(Adjust the Red or Blue values)

▶ OSD Menu Set up

BACKLIGHT

Strong/large sources of light coming from behind the main subject (such as a person indoors that is in front of a window) cause the light meter to underexpose for the main subject.



HLC : High Light Compensation / Masking the highlight in the image to distinguish the subject.

BLC : Back Light Compensation / User controllable mode, shown the subject clear in anywhere.

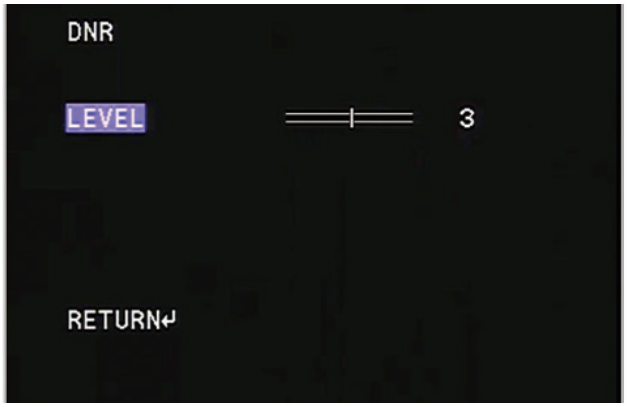
WDR : Wide Dynamic Range for WD Sensor / Helps to eliminate over & underex-posed areas of the picture.

- CONTRASR(LOW/MID/HIGH) : Luminance gradation enhancement
- CLEAR FACE(LOW/MID/HIGH) : Face emphasis function(Low-luminance gradation enhancement)

ATR-EX : Auto Tone Reproduction(=DWDR) / Digital Wide Dynamic Range

DNR(=3DNR)

Adjust DNR(3D–Noise Reduction) strength Level.



DAY & NIGHT - Switching of day operation/ night operation

AUTO : Automatic switching between day operation (color mode) and night operation (black and–white mode) depending on the ambient brightness

- BURST : Burst signal ON/OFF setting
- CNTL SIGNAL : Selection of brightness reference for identifying Day/Night (ILM level or external brightness sensor), Control Signal
- DELAY CNT : Adjust the condition time in order to switch day and night
- DAY→NIGHT : Day→Night judgment threshold setting
- NIGHT→DAY : NIGHT→Day judgment threshold setting

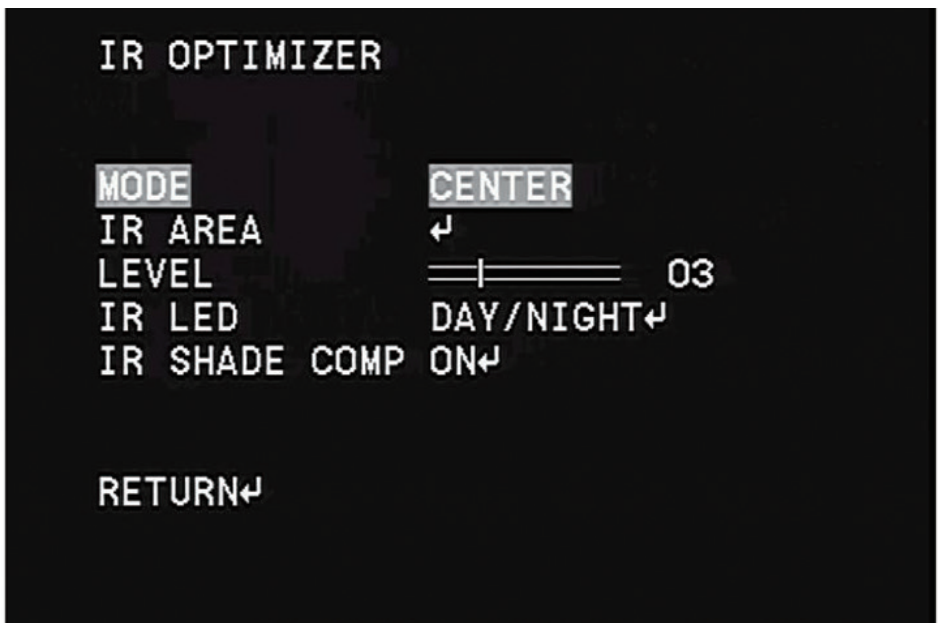
DAY : Color mode always on

NIGHT : Black–and–white mode always on

▶ OSD Menu Set up

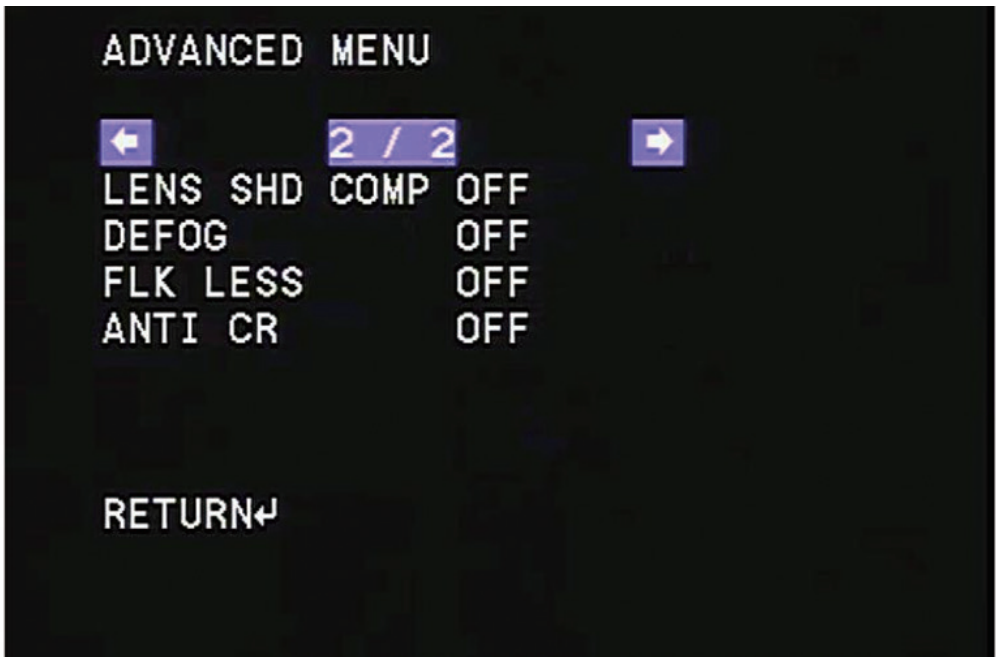
IR OPTIMIZER

If, when the Night operation mode of the Day/Night function is established, the mode is used together with an external infrared LED light source, excessive front lighting may be generated, resulting in overexposure. The IR optimizer function makes it possible to minimize this overexposure by optimizing the exposure control during Night operations and dimming the infrared LED light source.



MODE : IR optimizer photometry mode selection
IR AREA : IR optimizer judgment area setting menu in spot photometry mode
LEVEL : IR optimizer intensity setting
IR LED : IR LED setting menu
IR SHADE COMP : IR optimizer–linked shading function ON/OFF selection

ADVANCED MENU 2/2



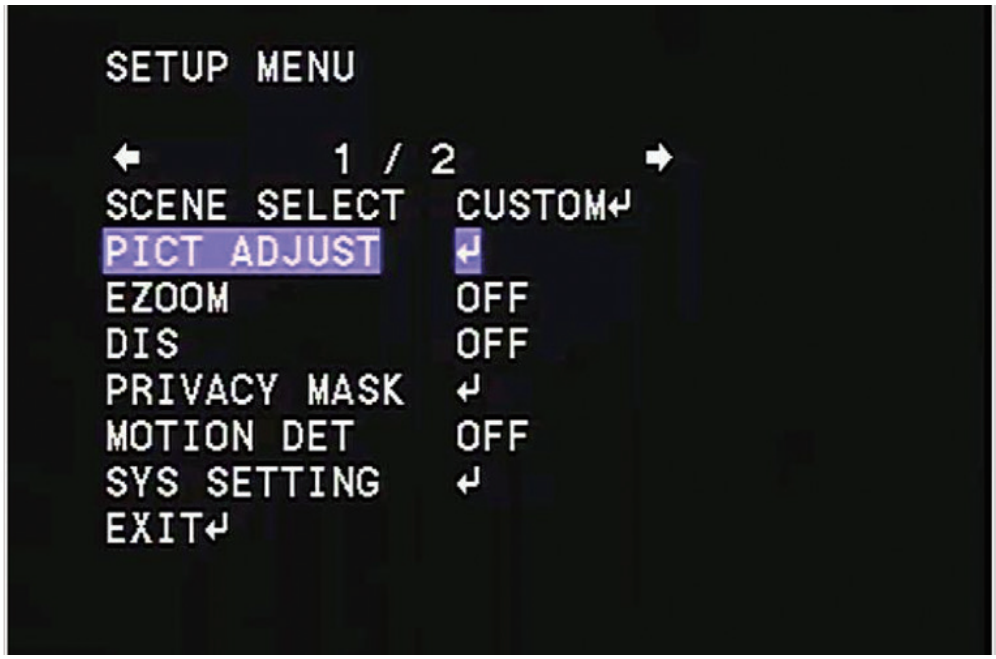
LENS SHD COMP : Sets the shading compensation when linked to IR.
DEFOG : Adjust Defogging function.
FLK LESS : Adjust Flickerless function.
ANTI CR : Anti Color rolling setting

※ **Caution:** When 'ANTI CR ON', WDR will not be performed effectively compared with when 'ANTI CR OFF'. If required WDR performed effectively with COLOR ROLLING, Use the products with DUAL POWER (Line-Lock) function.

▶ OSD Menu Set up

PICT ADJUST

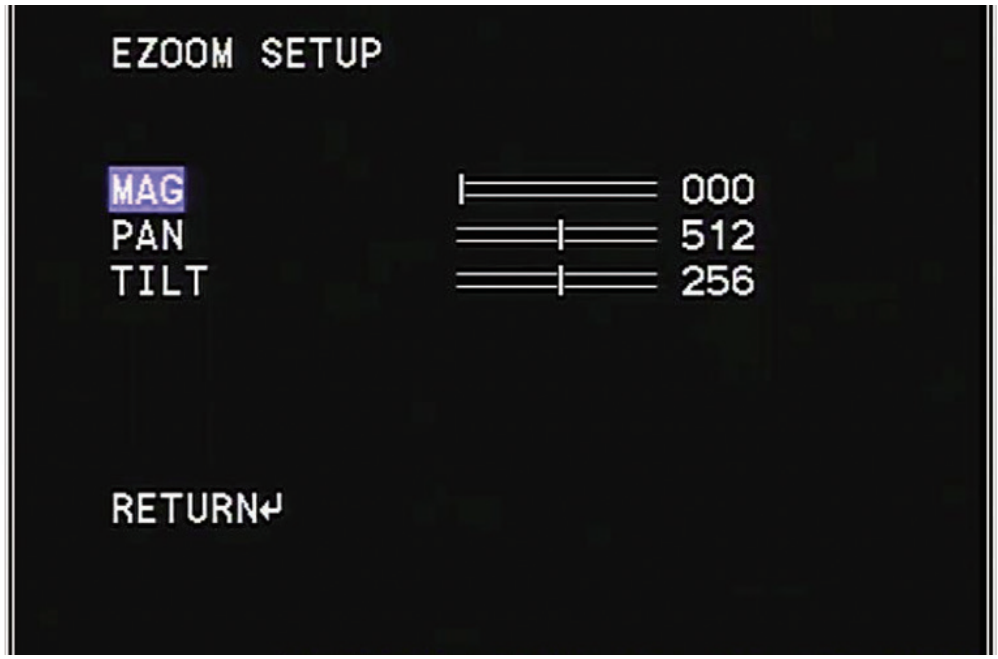
Simplified picture quality adjustment.



BRIGHTNESS : Brightness adjustment
CONTRAST : Luminance gradation enhancement
SHARPNESS : Edge enhancement
HUE : Hue adjustment
COLOR GAIN : Represents the color intensity

EZOOM

Electronic zoom setting.



MAG(X2~X256) : Electronic Zoom magnification
PAN: Electronic Zoom pan setting
TILT : Electronic Zoom tilt setting

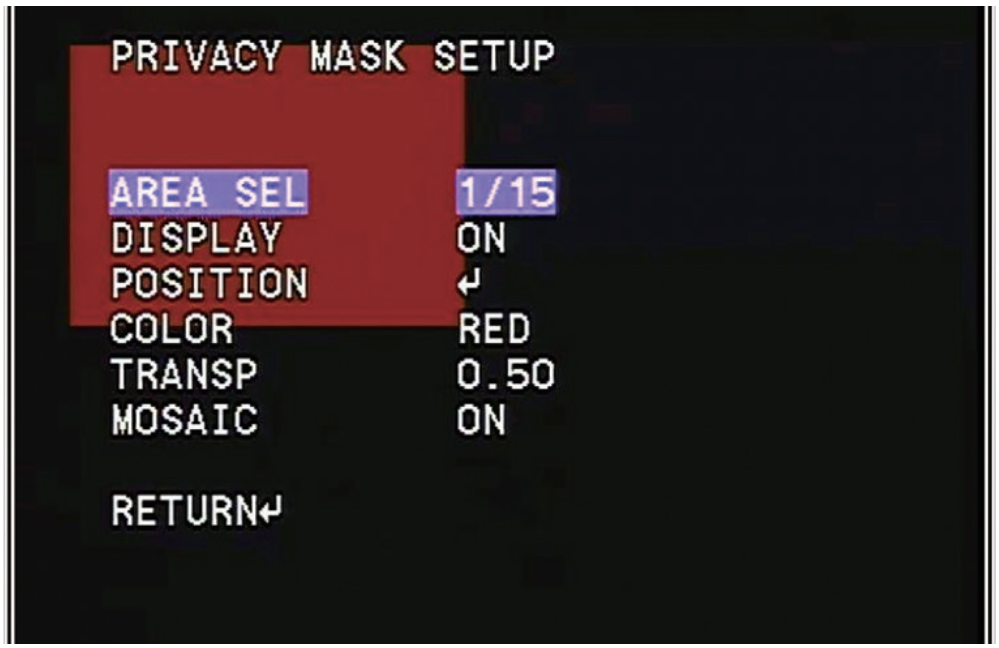
Digital Image Stabilizer

Activates Digital Image Stabilizer (You can't use the E-Zoom function when DIS is on).

▶ OSD Menu Set up

PRIVACY MASK

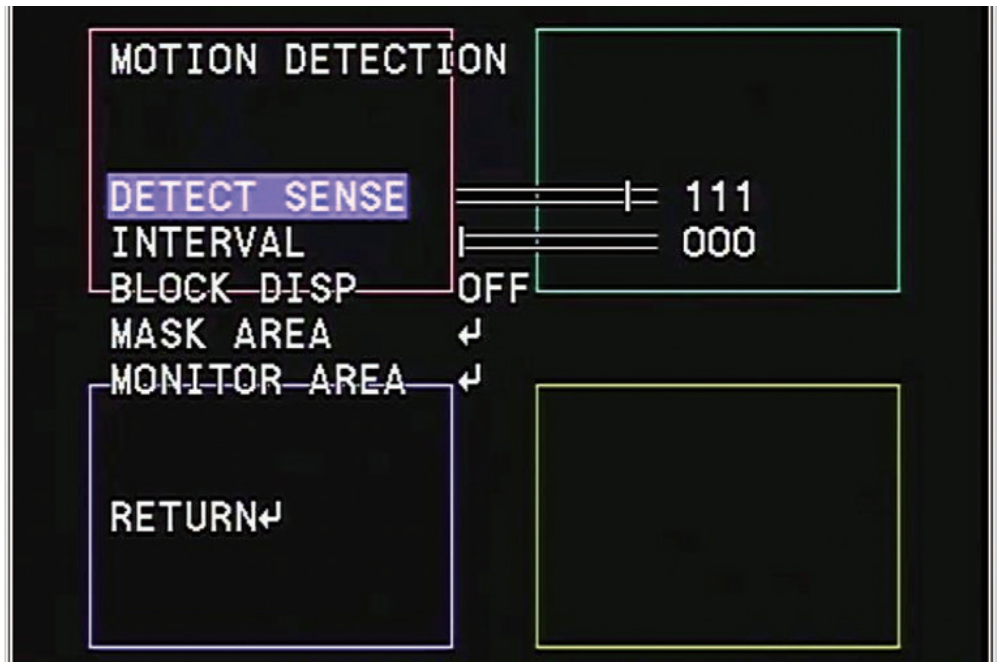
To conceal picture zones which are not to be monitored, 8 independently adjustable polygons are available which may be combined as well. To enable the masking, lightly press the control lever with the adjustment ON. Selected. The following sub-menu is inserted.



AREA SEL : Privacy mask number selection
DISPLAY: Privacy mask enable/disable display selection
POSITION : Privacy mask coordinate setting
COLOR : Privacy mask color selection
TRANSP : Privacy mask a blend value selection
MOSAIC : Privacy mask mosaic ON/OFF selection

MOTION DETECTION

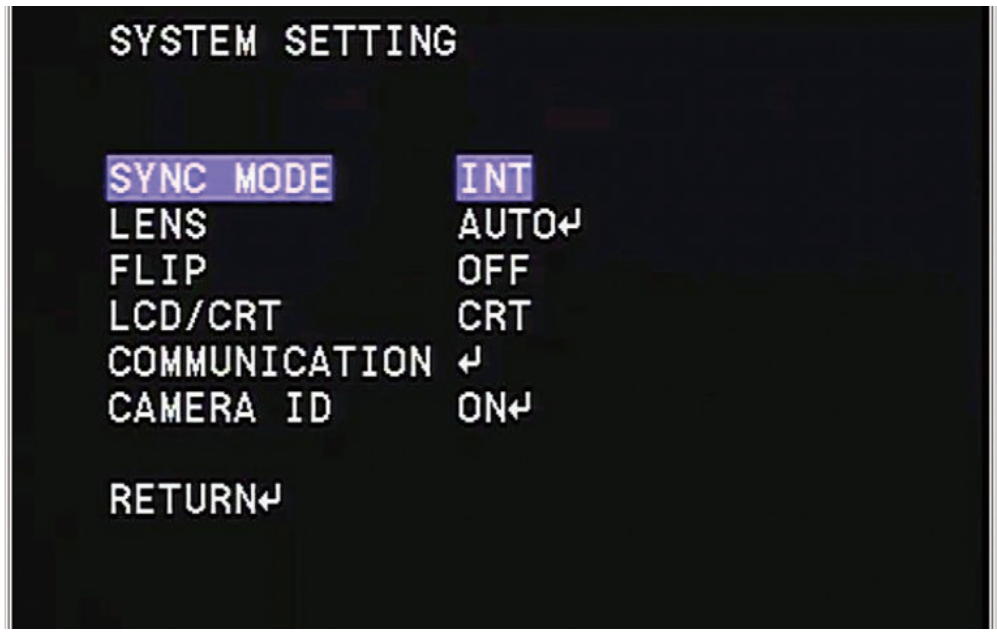
Mostly for used for environments where movement is rare. If movement is noticed in camera, the alarm system displays on the monitor thru text and/or outlines (as user selected).



DETECT SENSE : Motion detection sensitivity selection
INTERVAL : Motion detection interval
BLOCK DISP : Motion detection result frame display selection
MASK AREA : Motion detection setting menu, for setting the no-detection area
MONITOR AREA : Motion detection setting menu, for setting the detection area

▶ OSD Menu Set up

SYSTEM SETTING



SYNC MODE : Synchronization system display item
- Internal Sync with 12V DC power / External Sync with 24V AC power (Dual power only)
- When activating External Sync(Line-Lock), loss of Color-rolling might happen.

LENS : Lens type selection

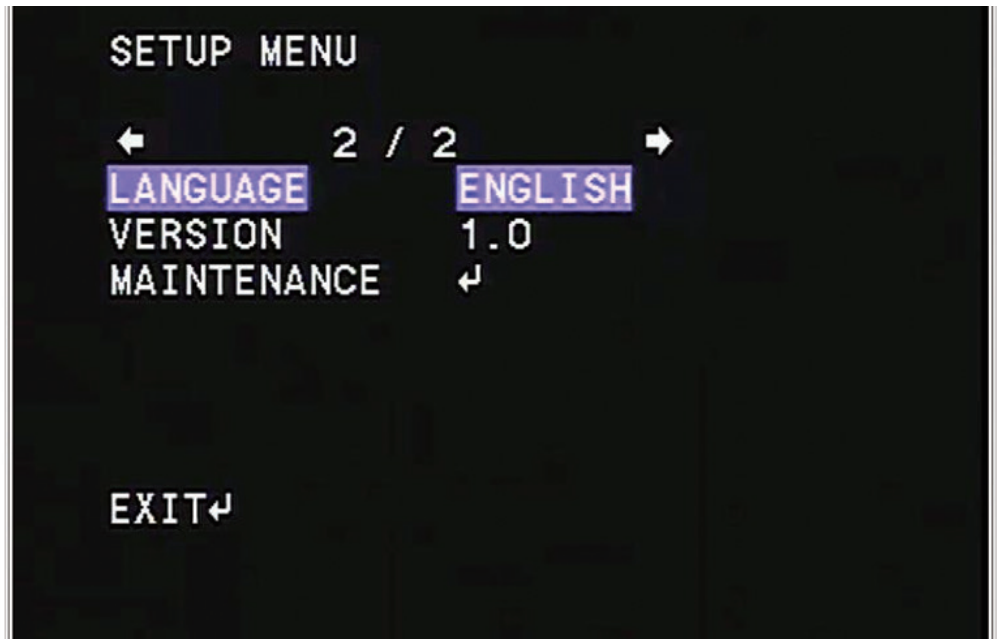
FLIP : Functions of mirror-inverted display of the picture
- H-Flip / V-Flip / HV-Flip

LCD/CRT : Monitor type selection (gamma)

COMMUNICATION : Communication setting, RS-485 setting menu(PELCO-D)
- ADRESS(001~255) / BUADRATE(2,400~115,200bps) / PARITY(OFF/ODD/EVEN)

CAMERA ID : Display the camera's ID on the screen

SETUP MENU 2/2



LANGUAGE : Menu display language selection item
– English, Espanol, Pyccknn, Portugues, Deutsch, Francais, Japanese
VERSION : Display F/W version
MAINTENANCE : Maintenance setting menu
– W.PIX MASK : White pixel compensation menu
– CAMERA RESET : Initializes the camera settings

EXIT MENU

SAVE : Save the value and exit menu (The current settings are saved in the flash ROM)
NOT SAVE : Retain the value and exit menu(The current settings are not saved in the flash ROM)
CANCEL : Escape the menu without save
BACK : Move back to previous menu

▶ Specification

D212H960 / D212HIR960

SPECIFICATION	
VIDEO	
Image Sensor	960H 1/3" COLOR SONY SUPER HAD CCD II (960H WDR)
Effective Pixel	976(H) X 494(V) PIXEL(NTSC), 976(H) X 582(V) PIXEL(PAL)
Scanning System	2:1 Interlace
Sync. Type	Internal, External (L/L)
Resolution	Color: 700TV-Line, B/W: 800TV-Line
S/N	More than 52dB or More (AGC OFF)
Video Output	1.0 Vp-p(Sync. Negative) Termination 75Ω
Min. Illumination	0.01 Lux(F/1.2), 0.0001Lux(Sense up), 0Lux(25M Range with 24pcs LED, Indoor)
LENS TYPE	
Lens	Vari focal auto iris lens
OPERATIONAL	
On screen display	Yes (8 Languages)
White Balance	ATW(1,800°K~ 10,500°K)/PUSH/USER1/USER2/MANUAL/PUSH LOCK
Shutter Speed	1/60(1/50) ~ 1/100,000SEC sec
Sense up	Auto /OFF
Backlight	BLC/HLC/ATR-EX/WDR/OFF
AGC	6~44.8dB
DNR	3DNR
Motion Detection	ON / OFF (4 Zone Selectable)
Privacy Masking	ON / OFF (15 Zone Selectable)
Mirror	OFF/MIRROR/FLIP/ROTATE
DAY & NIGHT	ICR (AUTO, COLOR, B/W, EXT)
SMART D-ZOOM	ON(X2~X256)/OFF
DIS	OFF/ON
Blemish Compensation	Yes
Defog	Auto/ON/OFF
Anti CR	Auto/ON/OFF

Troubleshooting

Nothing appears on the screen.

- Check if the camera and monitor's powers are on. (Also, the voltage and polarity.)
- Check if the video-out terminal of the camera and the video-in terminal of the monitor are correctly connected.
- Check if the iris of the lens is open.

The screen seems blurry and darker.

- Adjust Contrast and Bright level in the menu.
- Check the setting of Image adjust in the menu.
- Check if there is any dust or scratches on the camera window

The Image focus is not correct.

- Adjust the camera lens either far or near to make focus.
- Check the camera window for any finger prints or dusts found.
- Please clean off dust and any other debris on the window.

Motion detection function does not operate.

- Check if the MOTION DET setting is properly in the menu.
- Check the setting of motion detection area.

The image does not seem to be shown correctly.

- Check if the video cable is connected correctly.
- Long distance wire runs may require amplification.

Overall, the picture's color does not seem correct.

- Check if the setting of WHITE BALANCE is correct in the menu.

▶ Memo

Memo ◀